What is claimed is:

1. A heat-peelable double-faced pressure-sensitive adhesive sheet which comprises a substrate (a), a heat-peelable pressure-sensitive adhesive layer (b) formed on one side of the substrate (a) and containing heat-expandable microspheres, and a pressure-sensitive adhesive layer (c) formed on the other side of the substrate (a), wherein the heat-peelable pressure-sensitive adhesive layer (b) and the substrate (a) are peelable from each other by heating.

2. The heat-peelable double-faced pressure-sensitive adhesive sheet according to claim 1, which further comprises a pressure-sensitive adhesive layer (d) superposed on the heat-peelable pressure-sensitive adhesive layer (b) on its side opposite to the substrate (a).

3. The heat-peelable double-faced pressure-sensitive adhesive sheet according to claim 2, wherein the pressure-sensitive adhesive layer (d) comprises at least one viscoelastic material selected from the group consisting of a pressure-sensitive adhesive, a radiation-curable pressure-sensitive adhesive, a thermoplastic resin, and a thermosetting resin.

4. The heat-peelable double-faced pressure-sensitive adhesive sheet according to any one of claims 1 to 3, wherein the pressure-sensitive adhesive layer (c) comprises at least one viscoelastic material selected from the group consisting of a pressure-sensitive adhesive, a radiation-curable pressure-sensitive adhesive, a thermosetting resin, and a heat-peelable pressure-sensitive adhesive.

5. The heat-peelable double-faced pressure-sensitive adhesive sheet according to any one of claims 1 to 3, wherein the gel content of the pressure-sensitive adhesive layer (c) (after a heat treatment or radiation exposure treatment) is 90% or higher.

6. The heat-peelable double-faced pressure-sensitive adhesive sheet according to any one of claims 1 to 3, wherein the pressure-sensitive adhesive constituting the heat-peelable pressure-sensitive adhesive layer (b) is a radiation-curable pressure-sensitive adhesive.

7. The heat-peelable double-faced pressure-sensitive adhesive sheet according to any one of claims 1 to 3, wherein that side of the substrate (a) which faces the heat-peelable pressure-sensitive adhesive layer (b) has undergone a releasability-imparting treatment.

8. A method of processing an adherend using the heat-peelable double-faced pressure-sensitive adhesive sheet according to any one of claims 1 to 3, which comprises adhering the adherend to the surface of the pressure-sensitive adhesive layer (c) in the heat-peelable double-faced pressure-sensitive adhesive sheet, adhering a reinforcing plate to the surface of the heat-peelable pressure-sensitive adhesive layer (b) or pressure-sensitive adhesive layer (d), processing the adherend, subsequently causing separation at the interface between the heat-peelable pressure-sensitive adhesive layer (b) and the substrate (a) by heating, separating the processed adherend from the reinforcing plate together with, adherent thereto, the substrate (a) having the pressure-sensitive adhesive layer (c), and further separating the processed adherend from the substrate (a) having the pressure-sensitive adhesive layer (c).

9. The method of processing an adherend according to claim 8, which comprises adhering the adherend to the surface of the pressure-sensitive adhesive layer (c) in the heat-peelable double-faced pressure-sensitive adhesive sheet, adhering a reinforcing plate to the surface of the heat-peelable pressure-sensitive adhesive layer (b) or pressure-sensitive adhesive layer (d), separating by heating the processed adherend

from the reinforcing plate together with, adherent thereto, the substrate (a) having the pressure-sensitive adhesive layer (c) while supporting the processed adherend with a support, and further separating the processed adherend from the substrate (a) having the pressure-sensitive adhesive layer (c) while keeping the adherend in the state of being supported by the support.

10. The method of processing an adherend according to claim 8, wherein the adhesion of the adherend and/or the reinforcing plate to the given surface of the heat-peelable double-faced pressure-sensitive adhesive sheet is conducted under reduced pressure.

11. The method of processing an adherend according to claim 8, wherein a heating and pressing treatment is conducted after the adherend and/or reinforcing plate is adhered to the given surface of the heat-peelable double-faced pressure-sensitive adhesive sheet.

12. The method of processing an adherend according to claim 8, wherein the adherend is an electronic part or an analogue thereof.

13. The method of processing an adherend according to claim 8, wherein the reinforcing plate to which the heat-peelable pressure-sensitive adhesive layer (b) and the pressure-sensitive adhesive layer (d) are adherent and which is obtained by causing separation at the interface between the heat-peelable pressure-sensitive adhesive layer (b) and the substrate (a) by heating is separated from the heat-peelable pressure-sensitive adhesive layer (b) and the pressure-sensitive adhesive layer (d) using a sheet or tape for peeling to thereby recover the reinforcing plate and this reinforcing plate recovered is reused in the processing of another adherend.

14. An electronic part, which is produced with the heat-peelable double-faced pressure-sensitive adhesive sheet according to claims 1 to 3.

15. An electronic part, which is produced by utilizing the method of processing an adherend according to claim 8.